

THE OPTICAL MAGIC LANTERN JOURNAL AND PHOTOGRAPHIC ENLARGER.

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CONTENTS.

PAGE.	PAGE.
Notes 81	Lantern Slides and Lantern
The Magic Lantern: Its Con-	Slide Making... .. 86
struction, Illumination, Optics	Experimenting with Oxygen
and Uses (chap. 10) ... 82	Cylinders 87
Photographic Camera... .. 83	Editorial Table 87
Mr. A. Pringle on the Optical	Applications for Patents... .. 87
Lantern 84	Photographic Society of Ire-
Crystal Palace Exhibition ... 84	land 87
Scientists' Bi-unial Lantern ... 85	Selections 88
The Optical Lantern at the	Notes and Queries 88
Crystal Palace 85	The Lantern Society 88

CONTENTS OF No. 10.

Notices—Notes—The Magic Lantern: Its Construction, Illumination, Optics, and Uses (chap. 9)—Oxygen Cylinder Explosion—Transparencies from Paper Prints without a Camera—Lantern Slides and Lantern Slide Making—Hardwich on Scott's Warm-air Saturator—Editorial Table—The Facile—Flashes on Lantern Topics—Making and Painting (Comic) Slides—Foote's Polyopticon—Applications for Patents—Correspondence—Selections—Notes and Queries.

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Notes.

A FEW copies of Nos. 1 and 2 of this journal may now be obtained at sixpence each. Next issue will contain the index for the past year.

At a Transatlantic lantern meeting a series of views were projected of a toboggan slide, a swing at its highest point, and a railway train. This latter, going about fifty miles an hour, was photographed in 1/1003 of a second.

A GERMAN has introduced a "Prayer Book" camera, carrying twenty plates, 2 in. square. It is said to have a self-setting shutter and a device for changing the plates.

At the exhibition to be held in Japan this year, there is to be a photographic department, open to Japanese only. Mr. W. K. Burton writes that a good display is anticipated.

MR. NAKASHIMA MATSUCHI, who presided at a lantern exhibition at Tokyo, exhibited a series of slides from negatives made with a wide angle lens, to show the distortion that might be produced by its abuse. One photograph represented an enormous pair of feet, or rather boots, with a long perspective of legs, and a very small head and body apparently in the "middle distance behind them"; another showed a jinrikisha and fare, the jinrikisha man a giant filling up half the picture, his fare apparently far in the distance, the shafts preternaturally long; and another of a man holding out a glass of beer at arm's length, the glass exaggerated to about the size of the man.

GAS cylinders in the United States are not charged to the extent that they are in this country. About three hundred pounds on the square inch is the charge usually adopted. This is one-tenth of the pressure that has been used on this side of the Atlantic.

The Magic Lantern : Its Construction, Illumination, Optics & Uses.

CHAPTER X.—MANAGEMENT OF SCOTT'S WARM BATH SATURATOR.

As previously mentioned, a flame may be produced with oxygen, provided this gas is allowed to become charged with a hydro-carbon, which in the saturator to be described is kept warm.

This apparatus consists of a stuffed reservoir, with which are connected three tubes ; a circular jacket of metal surrounds it, there being an air space between, kept supplied with warm air, communicating the heat to that part containing the fluid with which the gas is to be charged.

Mr. Scott finds that the best fluid with which to charge the saturator is gasoline, as with this, little heat is necessary to produce a good light. As gasoline is not only very inflammable, but has a strong, penetrating and unpleasant smell, it is advisable, when filling the reservoir, to do so out of doors.

Having unscrewed the cap E (Fig. 37) and opened the taps, pour in, a little at a time, about a pint of the spirit, which will, by capillary attraction,

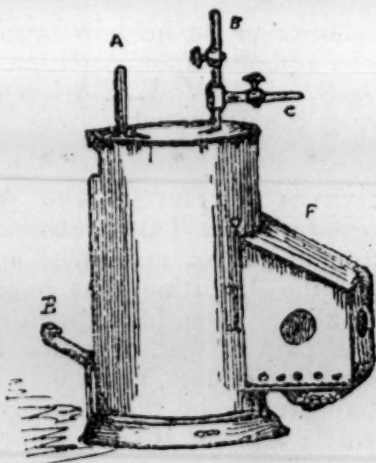


FIG. 37.

rise and saturate the wool stuffing. E being placed at the lower portion of the apparatus prevents it from holding more than the stuffing will absorb.

Any little surplus is then drained out by tilting the saturator. The cap E is replaced, the taps turned off, a cork inserted in A, and it is ready for use.

Perhaps the most convenient way is to hang it up behind the lantern, so that the shortest possible tubes can be used for the connections to the jet,

which should be a mixed gas one, with large bore. In order to prevent any leakage of the vapour through the indiarubber tubes, a stout quality should be employed.

A light ("fairy" lamp) is allowed to burn in the chamber F for about fifteen minutes before "lighting up," so as to warm the saturator.

The oxygen supply is connected with C ; A with the hydrogen side ; and B with the oxygen side of jet, or in the case of more than one lantern being used, with the dissolver. It may be advisable to connect a pumice safety tube with A, and on this side also the tubing should be tied on.

When all is in readiness, the hydrogen side is turned on for two or three seconds before applying a light, so as to dispel any air that may be in the jet, then turn on oxygen, and adjust the supplies by the jet taps until the best result is obtained.

It is requisite that the cylinder be supplied with a regulator, as all adjustment of the light should be done at the jet taps.

The limes should be hard, and be placed very close to the nozzle of the jet.

By proper attention to the details of management, the light produced will be found to be exceedingly pure and brilliant, and yet of a very pleasing colour.

When the light is to be put out, first turn off the vapour tap, then shortly afterwards that on the oxygen side, but never cut off the supply from the oxygen cylinder whilst there is a light at the jet.

This saturating apparatus may be used for enriching ordinary house gas. In this case C is connected with the supply, and A with the gas jet, B being kept closed.

If a single lantern only is used, the saturator may be charged with benzoline ; this has not the strong odour of gasoline, but it requires more heat, a small candle or a couple of fairy lights being required to warm the saturator.

When gasoline cannot be had, and dissolving views are required, methylated ether will give excellent results, a single wick night-light being used instead of the fairy light. Ether sometimes does not give quite so brilliant a picture as gasoline, not being suitable for use with large-bore nipples ; but with ordinary small-bore jets, there is practically no difference in the lighting powers of the two fluids, a brilliancy of four hundred candles being obtainable with the aid of a cylinder of oxygen.

Photographic Camera.

SOME time ago we alluded to the effects that could be produced upon the screen by a number of consecutive pictures of a scene. We also mentioned that a camera capable of making several exposures each second had been devised by Mr. Friese Green. To outward appearance this camera is a box of about 9 in. square; a lens protrudes from one end, and a crank handle from the other. Each time the handle is turned, four exposures are made on a prepared film, the film travelling along the requisite distance before the shutter is opened for exposure. The handle (see Figures 1 and 2) is connected with the main shaft, which by suitable gearing pays off and re-winds the sensitive film, the stock being contained on the upper spool. A suitable arrangement is provided for causing the film to remain stationary during the momentary space of time that the exposure is being made, which (says the *Photographic News*) is the cleverest part of the invention.

"Immediately beyond the exposure screen, and between it and the up-winding roller, is an intermittently-acting drum of such diameter or circumference as that each other turn will take up and roll forward the exact amount of film required for each picture; in passing this film forward, the drum also draws into the exposure position a fresh length of film ready to be exposed. To effect this intermittent motion, the aforesaid drum has a single, long escapement tooth, which, when the drum is not in motion rests on the cylindrical surface of a slotted pinion, which gears into, and is driven by, the main shaft with a continuous motion. The slot in this pinion is so arranged that once only during each revolution of the pinion does it allow the escape tooth to pass, and when this occurs, the drum, under the action of a driving spring, with which it is provided, makes one full turn, when the escapement tooth, coming round again, rests on the cylindrical portion of the slotted pinion as before. The spindle on which the drum revolves also gears into, and is driven with a uniform motion from, the main shaft, and to this shaft is attached the one end of a coiled spring, the other end of which is fixed to the inner circumference of the drum itself. As the spindle revolves, this spring winds up, and, on the release of the escape tooth and drum, the spring unwinds, carrying both the drum and escape tooth with it. Then the film is passed forward between the winding and unwinding rollers at this point only, with the necessary intermittent motion. The constant uniform motion of the paying out spindle as it unwinds causes a certain uniform length of the film to pass forward toward the exposure screen, when it collects into a kind of loop in readiness for use.

As soon, however, as the detent tooth attached to the drum escapes through the slot in the pinion, the drum makes a single revolution, and in so doing both removes the exposed film from the screen, and, at the same time, draws a loop of fresh film which has been gathering into the exposed position, and, at the same time, passes forward the exposed film into the form of another loop in readiness to be wound up on the winding roller.

"The shutter is made in two portions, each provided with a slot, which in one position only allows the light from the lens to pass, and it is only by this simultaneous action of these two shutters that any action of light on the film can take place. One portion of this shutter is caused to revolve with a uniform motion; the other portion is worked by a rocker, or slide, actuated by a cam; to this latter portion of the shutter is attached a spring, with a tension screw to regulate its speed."

Transparencies from negatives thus obtained are passed through two lanterns, supplied with suitable mechanism for rapidly placing them in position. By a "cut off" in the rays of light, the one picture is rapidly merged into another, the change taking place during the moment in which the rays of light are cut off.

The capabilities of this apparatus were described in the November number of the *Optical Magic Lantern Journal*, under the heading of "A Startling Optical Novelty," and from that source was widely copied in the daily and weekly papers, in this country and abroad.

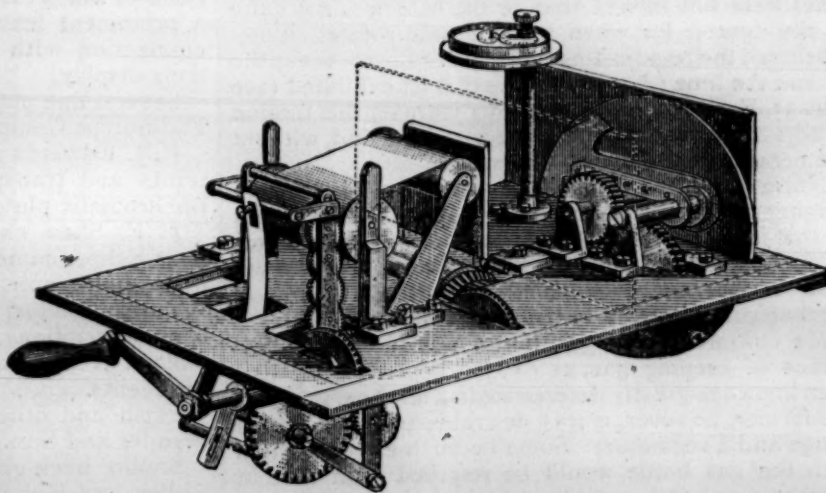


FIG. 1.

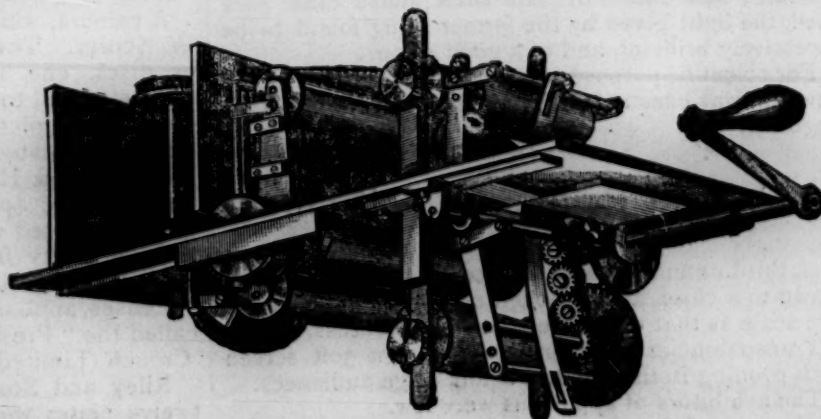


FIG. 2.

Mr. A. Pringle on the Optical Lantern.

AT a meeting of the Camera Club, held on March 6, Mr. Pringle in a lecture on the Lantern explained the optical system, the various burners and lights employed, the condenser, and other belongings.

Referring to the body of the lantern, he said that as its use was to hold the various parts in position, and to exclude extraneous light, he considered that in the majority of cases the body was made unnecessarily bulky. He exhibited a lantern with a 4in. condenser, which packed up in a box about a foot square, and formed a convenient hand package.

Although he had not tried all the forms of condensers, he expressed the opinion that intending purchasers could not go far wrong in purchasing one formed of two plano-convex lenses. Relative to the diameter it must be remembered that whilst a 3½in. condenser would cover a lantern slide with a circular mat, it would be necessary to use one of a larger diameter for cushion mats.

Specimens of limelight jets were shown, including the oxy-calcium, blow-through, and mixed jet, also one which he had had specially constructed for his own use (see Fig. 16 in September number of this journal).

A certain amount of inconvenience was caused when limes were not turned true, or the hole was not quite in the centre, for when the lime was rotated it necessitated the re-adjustment of the distance between the jet and the lime; but in the case of a jet exhibited (see Fig. 35, February number of this journal) this motion of adjustment could be regulated from behind, without the necessity for opening the lantern.

Noise or roaring of the jets was caused by certain roughnesses or abrasions, or by the bends in the piping of the jet being too angular; and although two jets might be constructed of the same pattern, it was quite possible that one only would roar; it was a case of mechanical perfection in the manufacture.

He considered the gas bottle was by far the best means of keeping gas, as oxygen kept in a bag had been known to greatly deteriorate in a few hours. With the former, however, it was desirable to have both a gauge and a regulator. Some better means of union with the gas bottle would be required than that at present employed—say the placing of a small lead washer between the brass connections.

Scott's new saturator and Broughton's tank were tried, the light given by the former being found to be excessively brilliant, and of a good colour.

For scientific purposes Mr. Pringle had recently had new lanterns constructed by Messrs. J. Newton. (See page 85.)

Crystal Palace Exhibition.

THE third annual Crystal Palace Exhibition has just drawn to a close, and although not on such an extensive scale as that of last year, it was a success.

Transparencies were projected upon a 30ft. screen each evening in the theatre, before large audiences.

The exhibitors of apparatus were few.

Watson and Son showed cameras, stands, enlarging

lanterns and general apparatus. This firm are now fitting their cameras with an aluminium turntable, which greatly reduces their weight.

W. F. Stanley exhibited amongst other photographic necessities their portable dark room, and Ferrero's magnesium lamp for enlarging.

R. and J. Beck made a specialty of aluminium lens mounts; these reduce the weight of a lens by one half, whilst the cost is from 25 to 40 per cent. more than the brass. Microscopes, washers, &c., were also included in their exhibit.

D. Noakes and Son had one of the most attractive stands, containing optical lanterns of various kinds, the key detective camera with clip for securing it to a stand, lenses, condensers, saturators, and a variety of slides. One of the most interesting features was the mounting of lenses, and the manufacture of their patent gas regulator, shown in actual operation by workmen. This regulator when attached to the jet tubes forms a means of adjusting the supply of gas with the greatest nicety. During the evenings they exhibited on a small screen several slides to show the perfect registration of their dissolving lanterns.

Theobald and Co. had operatives present showing the method of transferring lithographic slides from paper to the glass. Slides were also being painted by hand, and were at dusk exhibited on a small screen. Numerous condensers, ¼, ½, and ¾ plate lenses of low price, of which this firm are making a specialty, formed a prominent feature. Lanterns and all requisites in connection with their use were also to be found in their display.

Several fine platinotype pictures were shown by the Platinotype Company.

B. J. Edwards and Company exhibited specimens of prints and transparencies from negatives taken on isochromatic plates.

J. F. Shew and Company had a good display of their Eclipse cameras, stands, lamps, and enlargements from photographs taken with their apparatus.

Taylor, Taylor, and Hobson had a supply of lenses of all descriptions, including their casket lens, shutters, finders, &c.; also the *Blair* camera, for which they are agents.

Plush and other frames were exhibited by Messrs. Mander and Son.

Studio back-grounds and accessories by Holmes, Sadler, and Holmes.

Crouch and Company showed samples of picture frames, of which they are makers.

A camera, which bears his name, was exhibited by W. Scorer. The front contains two eccentric flanges, or discs, one within the other, so that the lens can be moved to any desired position, thus enabling two or more pictures to be taken on one plate. The camera is rotated by rack and pinion.

Sands and Hunter had a well-selected stock of photographic apparatus, and a collection of photographs exposed with shutters of their make.

Some pretty frames and a selection of albums were to be found on the stand of W. Luks.

Lenses, appliances, and an ingenious hand camera, called the "Presto," were among the exhibits of Henry Crouch (Limited).

Riley and Son exhibited a hand camera, in which twelve plates were contained in sheaths, which were fastened to an endless band. A knob, on being pushed

forward, brought a plate into position, whilst when pulled back made the exposure.

G. Houghton & Son had an exhibit of general apparatus, their leading feature being portable dark rooms.

W. F. Slater had some samples of moulding on view; and Benham and Froud had a stand containing the "Perfection" dark room lamp.

A new style of photographic wrapper was shown by Trevor and Co.

Some ingenious apparatus connected with the optical lantern was displayed by A. & A. Clarkson, viz., duplex regulator, which is a combination of two regulators, which allows a full supply of gas to be maintained until the pressure at the inlet has decreased to one-third of an atmosphere.—A safety gauge, which is filled with water, preventing the access of gas, which enables it to be employed alternately for oxygen or other gases without fear of danger.—A convenient combination jet, which can by the movement of a lever be converted either into a mixed or a blow through jet. In the latter the lever, which is made hollow, conveys the hydrogen supply to the lime.—A condenser and lime-light for use with the microscope, which provides a beam of light either convergent, parallel, or divergent, as desired.—A tray containing divisions, each to hold one lime, which slides into a tube, and is secured air-tight by a screw top. By this means any particular lime may be taken out without disturbing the others.

On a miscellaneous stand, under the care of Mr. Wm. Cobb, were to be found walking-stick stands—which were particularly applicable for use with hand cameras—sent by W. R. Baker; Pearson and Denham's reducing camera for lantern slides, the important feature of this being that either the whole or part of a negative may be reduced. This firm also exhibited a camera with a circular bellows, named the Circumbra, which packs in small space. A. W. Scott's gasoline saturator was also on exhibition at this stand.

On the stall of Justin Brothers was a camera stand, which folded up in the space of a few inches. Each leg is a spiral steel, which when extended, twisted, and capped, forms a rigid stand. Sharp and Hitchmough's display was a varied one, and included enlarging and other cameras, including the *Aptus* hand camera, which, by its construction, can be used as a Detective, or extended for use with a lens of long focus, or contracted for a wide angle lens. This firm supply cameras in parts, numbered, so as to be easily put together by amateur mechanics.

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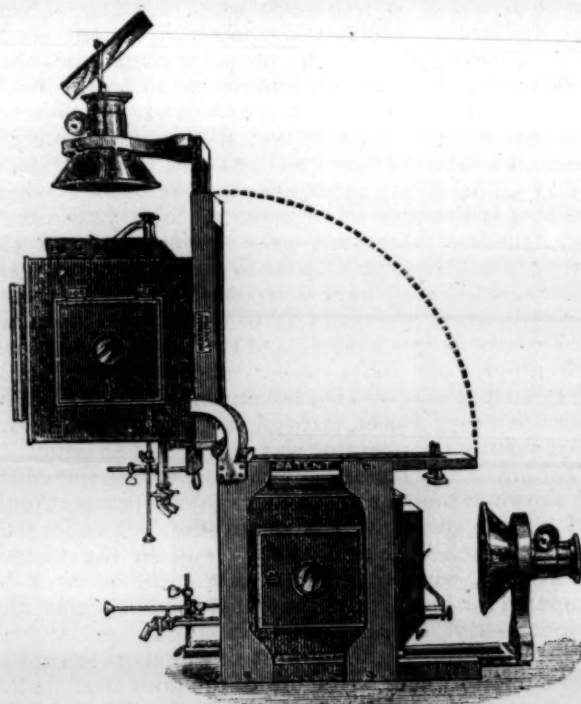
LIVERPOOL AMATEUR PHOTOGRAPHIC ASSOCIATION.—On 20th March the members and friends held their first ladies' social. Although the association has been in existence since 1863, the experiment of a ladies' evening had not been before attempted. The result, however, proved highly successful in every way. The first hour was devoted to an excellent concert (vocal and instrumental), some of the leading local amateurs kindly assisting. During an interval refreshments were served in the adjoining apartments, a pleasant feature, giving the opportunity for an agreeable chat and social intercourse. The entertainment concluded with the president's lecture on Norway. This embraced one hundred and thirty views taken last year by the lecturer, Mr. Paul Lange. Many of the scenes depicted were hand camera exposures, giving the daily life of the people of Norway. The pictures were shown on a 16ft. opaque screen with Messrs. Archer and Sons' large lantern and long focus (12in.) lenses.

Scientists' Bi-unial Lantern.

ON another page reference is made by Mr. Andrew Pringle to a new form of lantern, made by Messrs. Newton and Company, of Fleet-street, E.C. The lantern, which has been constructed for scientific lectures, consists of two separate lanterns fastened one above the other.

Their fronts can be drawn apart from the condensers, so that space is provided for an electroscope or other apparatus.

So as to enable the upper lantern to be used for objects which must be placed in a horizontal position,



it can be tilted at a right angle to the lower one, and still throw an image on the vertical screen, by reason of a mirror which is attached to a rod at the side of the lens (See cut.)

Amongst many uses that will suggest themselves in connection with a lantern placed horizontally is that of being able to make a sketch on ground glass or other suitable material.

—:—

The Optical Lantern at the Crystal Palace.

THE lantern at the Crystal Palace was a greater success this year than on the two previous years. It was under the sole management of Mr. W. Brooks, of Reigate. The lenses were made expressly for him by Messrs. Taylor, Taylor and Hobson, of Leicester, and their performance leaves nothing to be desired. The lantern exhibition took place in the Opera Theatre, the lantern being in the gallery facing the stage at a distance of 110ft. from the screen, which was opaque, so not the slightest ray of light was lost. The lenses

are symmetrical in form, having only four reflecting surfaces, give perfectly straight lines at the margins, and the definition to the very corners of the immense screen (which is 30ft. square) was truly marvellous. The lenses have a very great depth of focus, and when once focussed for the exhibition required no racking in and out for every slide, as is very often the case with many lenses of the old form. There are very few places where the lantern can be used on such a grand scale; and it has several times been remarked that the Crystal Palace ought to be the home of the lantern.

There was also another feature in this year's exhibition, and that is the lime jets that are used, which is due to Mr. Brooks, whereby the light in the lantern was doubled, which is important when working at very long distances. The heating power of the jet was so powerful that in using the ordinary sized limes they were rendered white hot almost round to the back. Although some of the slides passed through the lantern this year were very dense, yet there was scarcely a slide but what this light has been able to penetrate.

There is another point which must not be overlooked, and that is the gas arrangements. The year before last, cylinders were used near the lantern, and the management thought it better to put up a pair of gas-holders, which they have done immediately under the stage (there are two floors below it), and iron pipes are led from both gas-holders, and two small stand pipes, with nipples for India-rubber tubes, are just under the table that supports the lantern in the gallery. The pressure never varied throughout the exhibition, and consequently the operator was relieved of anxiety.

Taking these lantern shows as a whole, the slides are shown at their best. In these days of competitions, and as the authorities have set the ball rolling by offering a solid silver challenge cup in the picture department, why not offer a substantial prize to be competed for in a like manner by different clubs and societies—say, of not less than a hundred slides? And it would be to the interest of the management of such clubs to weed out some of the poor stuff that is now sent in as slides by individuals who have not the slightest taste and no art feeling whatever. PHOTO.

—:—

Lantern Slides and Lantern Slide Making.

(Continued from page 76.)

ONE noticeable peculiarity about hydroquinone developed plates is that an opalescent deposit forms on the film, supposed to be due to sulphite of soda, which will come off by rubbing the film over with a tuft of absorbent cotton, after the plate is fixed and washed.

The ferrous oxalate developer, commonly known as the iron developer, has for a long time been regarded as the standard for lantern slides on dry plates, and when properly handled it does produce exquisite results. But it does not keep well after being mixed, and rapidly deteriorates on exposure to the air. The point most to be feared is the precipitation of the ferric salt, by having too much iron in proportion to the oxalate of potash. Two separate saturated solutions, one of sulphate of iron and one of oxalate of potash, are made by dissolving each in hot water. The

iron is acidified with five drops of sulphuric acid to each pint, while the neutral oxalate may be made acid by adding oxalic acid until blue litmus paper is turned red. To develop use:—

Oxalate of potash solution ... 6 ounces.

Iron solution ... $\frac{1}{8}$ to $\frac{1}{4}$ of an ounce.

When the detail has appeared, if the development is too slow, about $1\frac{1}{2}$ ounces more of the iron solution may be added, which will increase the density. It is advisable, after fixing, to immerse the plate in a clearing bath of alum and citric acid.

We now come to a new developer, which will supersede all others for lantern slide making, as it gives to the film a bluish black tone, very similar to the palladium or platinum tone usually given to wet plate slides. I refer to "Eikonogen." The proportions recommended are:—

Sulphite of soda ... 10 grains.

Eikonogen ... 5 "

Carbonate of potash ... 2 "

Water ... 1 ounce.

A developer thus made will develop rapidly from seven to ten slides in succession, each of which will be absolutely clear glass in the high lights, and have in the shadows a density so delicate that the light of the optical lantern will bring out in fine relief all the details. The slides possess a richness in crispness and sparkle that is seldom seen in wet plates. The rapidity of the action of the developer may be retarded by adding a few drops of a 10-grain to the ounce solution of bromide of potassium. After the slides are washed in changing water for half-an-hour, they should be rubbed off with absorbent cotton, to remove any floating particles that may have become attached to the surface, and then set up to dry. Mats for lantern slides should vary in size and form with the subject in hand. One method of making them is to have a number of different sized brass forms made, which may be laid over the paper confined in a printing frame, and then be cut out with a Robinson wheel cutter or a penknife. From three to four mats may be cut out at one time in this way. Another plan is to make special dies out of clock spring or corset steel, by grinding down one edge to a cutting edge, and bending the strip around a wood form of the proper dimensions, previously cut out, and holding the steel in place by suitable screws. If the paper is made into several folds, and is laid on a block with the end grain upward, and the die inverted and hammered down through the folded paper, two dozen or more mats may be cut out very quickly. Another mat used by members of the Boston Camera Club has dotted lines printed on it, intended to serve as guides for cutting out with a penknife. The lines are made in proportion suitable to mat reductions from 8 by 10, 5 by 8, $6\frac{1}{2}$ by $8\frac{1}{2}$, 4 by 5, and other sized negatives.

There seem to be several different ways of labelling and marking slides; but the system adopted by the American Lantern Slide Interchange appears to be the simplest. After the cover glass is put on by the usual gummed strip paper, holding the picture in its natural position, the descriptive label is attached to the right-hand side of the cover-glass, with the reading matter facing inward, while the thumb label is placed on the lower left-hand corner. The reason for this is that as the slide is taken up and held between the

thumb and finger, with the thumb on the thumb label, the description and name on the label on the other end are very easily seen and read. Still holding the slide with the thumb and finger it is at once pushed into the slide carrier of the lantern, and appears correctly on the screen. The cover glass should invariably go toward the condenser of the lantern. If the plan described is used, there need be no mistake in putting through a number of slides.—F. C. BEACH (Read at Society of Amateur Photographers, N.Y.).

Experimenting with Oxygen Cylinders.

COMMENTING upon the recent explosion at Polmadie, *Photography* says:—"As the accident could not but prove deleterious to the use of cylinders, and to remove doubts on various points, the company thought it advisable to subject the cylinders to an exhaustive series of tests, so as to prove beyond dispute that they are thoroughly adapted for the purpose of carrying the gases, and capable of withstanding the most extreme amount of rough usage to which they could possibly be subjected during transit from place to place. The cylinders used are of different sizes, varying from 1ft. long by $3\frac{1}{2}$ in. diameter, to 6ft. 6in. long by $5\frac{1}{2}$ in. diameter. They are made of mild wrought steel $\frac{1}{4}$ in. in thickness, and before being used each cylinder is subjected to a hydraulic test of at least twice its working pressure, and is afterwards stamped with the pressure to which it was subjected, the date of the test, and the test mark. The cylinders are re-tested periodically, and, for the purposes of safety, the custom of the company has been to paint those for the different gases in distinctive colours, so as to avoid the danger of mixing. As a further precaution, every cylinder which is brought into the works after having been in use is at once emptied. To make the recurrence of such a misfortune as the recent accident absolutely impossible, it has been decided to adopt a left-handed thread for the valves on the hydrogen and coal gas cylinders, so that by no possible inadvertency can they be filled at the oxygen pump. A number of experiments were made about ten days ago which gave excellent results. A 6ft. 6in. cylinder, weighing about 1cwt., was twice raised to a height of 35ft., and dropped horizontally upon a solid iron block 12in. square and weighing $3\frac{1}{2}$ cwt., each blow bending it to the extent of about $\frac{1}{8}$ in. It was then dropped vertically on to its round end, having a clear fall of 3ft., when it was found that the impact had only flattened a part of about the size of a penny piece. It was next placed across the iron block, and an iron weight of $6\frac{1}{2}$ cwt. dropped on to its centre from a height of 35ft., the blow crushing in the side to the extent of $\frac{1}{8}$ of an inch. The cylinder was subsequently placed on two iron blocks, set 4ft. 1in. apart, so as to support the ends, and the same weight again let fall upon it from the same height, with the result that it was bent $4\frac{1}{2}$ in. from the straight, but did not explode. Another cylinder was afterwards tried in the same manner, with the exception of the crushing blow, and in this case even a more satisfactory result was obtained, as it was bent to the extent of $7\frac{1}{16}$ in. by the bending blow, and still remained intact. A smaller cylinder, measuring 3in.

long by $5\frac{1}{2}$ in. diameter, containing 17lb. liquefied carbonic acid gas, was also dropped crossways and vertically from the same height, and was afterwards flattened to the extent of $1\frac{1}{2}$ in. by dropping the $6\frac{1}{2}$ cwt. weight upon it, without injuring it otherwise than in shape. Each of these tested cylinders were subsequently found to contain the full quantity of gas, and to be perfectly sound. Other experiments were of a similar character, and were equally satisfactory. A 6ft. 6in. cylinder, weighing 107lb., including the contents, was dropped four times across the iron block from a height of 35ft., these trials producing a bend of $2\frac{1}{2}$ in. It was also allowed to fall on its end, with little perceptible result. A smaller cylinder was treated in the same manner, and sustained no greater injury than a few dents."

Editorial Table.

WE have received samples of coloured mats and bindings for lantern slides from Mr. A. R. Wormald, Sutton. The adoption of bindings of various colours for different sets of slides will be found of great convenience.

Applications for Patents.

No. 2444.—Feb. 14, Edward Keynes Purchase, "Improvements connected with apparatus for displaying pictures by rotation."

PHOTOGRAPHIC SOCIETY OF IRELAND.—During the past month "The Optical Lantern" has been the subject of two excellent demonstrations and lecturettes at the above society's meetings. The first was given by James Carson, C.E., his subject being "The Optical Lantern and How to Use It." The lecture was practical in every part; it was illustrated by the lantern, the various parts and their uses were explained, including single and double lanterns, "blow through" and mixed gas jets, valves, gas bags and bottles, method of testing gas as to purity, condition of limes and how acted upon in certain conditions, the methods of centring the light, both when one and two lanterns were used. Several slides were put through the lanterns to illustrate the points touched upon. Blackboard diagrams were used to illustrate the connections as made with the gas bottles, and to show the utility of the "bye pass." When the following meeting was held, J. H. Hargrave, C.E., gave a lecture and demonstration, taking the subject, "Lantern slides and how they are made. The lecturer directed attention to the various plates now issued for lantern slide making; these were described. He referred to the two methods usually resorted to: (1) contact, (2) reduction. In illustration of contact method, Mr. Hargrave made two slides during the evening, and developed one with pyro, the other with hydroquinone. He put up a slide showing the use of masks and binding slips, and referred to Wormald's masks as supplying a long-felt want. Hughes' metallic binding shield was shown and referred to. With regard to reduction the lecturer showed how at little expense the ordinary camera can be so fixed on a base-board and manipulated to reduce large sizes to the regulation $3\frac{1}{4}$ in. by $3\frac{1}{4}$ in. slide.

CELLULOID lantern slides can easily be placed between two pieces of nine ounce glass; this will keep it flat, prevent ignition, and be of the usual thickness of a lantern slide.—*Jas. Alex. Forrest.*

Selections.

PLATES developed with eikonogen are more liable to frill than those developed with pyro.—*F. P. Cembrano.*

IT is universally acknowledged that the lantern affords the best means of entertaining both young and old, and that as a religious, moral and educational agent it occupies a position of the widest usefulness, which fact was recently confirmed by the Archbishop of Canterbury.—*E. H. Stevenson.*

ETHER is perfectly safe if used in a properly made stuffed saturator, but to use it in an unstuffed tank is dangerous. I have never heard of an accident caused by a stuffed saturator.—*Albert W. Scott.*

ANYONE who can develop a negative can make a lantern slide. Simply photograph the negative and develop the same as a plate.—*J. Dunn.*

EIKONOGEN may be said to be a universal developer, since it is capable of being used for the development of negatives and bromide prints, and gives magnificent results when used as a developer of lantern slides.—*Edward Weston.*

THERE are many photographic books that are now regarded as standard works that might be reviewed in photographic clubs that would furnish excellent subjects for discussion.—*J. B. Gardner.*

AMMONIA can be used as the alkali with eikonogen developer, and I find it works beautifully.—*H. G. Piffard.*

THE advantages of a stereoscopic outfit from an amateur's point of view are compactness of apparatus, great certainty of producing a pleasure-giving result under disadvantageous circumstances, suitability for production of lantern slides, direct suitability of apparatus for taking single pictures of artistic proportions and large enough for most amateurs.—*G. D. Macdougald.*

THE making of lantern slides and transparencies is so pleasing and fascinating an employment that no amateur can be said to have had his proper enjoyment of photography who has not tried it. No doubt the majority of lantern slides are made by contact with quarter plate negatives, and very satisfactory results can be obtained; but just as a breadth, and softness, and superior artistic qualities are produced in an enlargement as compared with a contact print, so with a reduction in the camera can the hardness of contact printing be avoided.—*A. R. Wormald.*

I USE the lantern in a college I conduct. It tells them in twenty minutes, with astonishing clearness, the story of history, travel, and the latest researches of science and religion.—*Rev. C. H. Woolston.*

THERE is something about photographs made by a person possessed of regular art training that gives to them an artistic value, and this fact is so evident and prevailing that it has forced itself directly against the well known prejudice of artists so strongly that there are now but few painters and illustrators, even of the highest rank, that do not recognise it.—*F. A. Hetherington.*

A LANTERN with a good and striking appearance goes a long way with some audiences as to the success of entertainments, and I have heard it remarked in the case of a large and elaborate lantern, "What a very powerful instrument that must be!"—*G. R. Baker.*

Notes and Queries.

B. J. A.—The marks upon the negative sent are caused by the finger touching the film before development. We know of no means of removing them.

Ch. Paris (New York) writes: "I have read in the *American Amateur Photographer* a portion of an article by Mr. Cole, which appeared in your journal, describing a convenient style of camera for making lantern transparencies. Please send me journal containing the full description, as I cannot get that number at the International News Company. Also, where can I get a camera of this nature ready made?" *Answer.*—The article appeared in our issue of October, 1889. Mr. Walter Griffiths, Birmingham, makes a good camera of this nature. For prices, &c., see his advertisement in our columns.

Constant Reader.—The following information has been sent to us:—"Messrs. Wilkinson and Company, Holmside, Sunderland, supply the frames, wood boxes, and all fittings for making slides; Messrs. Theobald and Co., Bath-place, Kensington, can supply boxes, outline slides for painting, and frames for slipping slides; Messrs. Kettle, 9, New Oxford-street, make the boxes asked for. Mr. Walter Tyler, 48, Waterloo-road, S.W., can supply the wants."

Dazley writes: "The special sets named—such as 'Friendless Bob,' 'Peep Behind the Scenes,' &c.—are copyright designs, and are not produced by several firms, but by one who sell to dealers at a given price. The negatives are never hired," as suggested by "Constant Reader."

Hitching.—The lime is evidently too soft; better try a harder variety.

L. Gorhikoff.—The rubber tubing is probably rather large, but perhaps if the end is tied on it will answer the purpose.

R. A. R.—All your operations were correct; but unless you rub the glass with powdered talc the print will not come off. Try this, and let us know if you succeed.

Broken Condenser.—Nothing short of a new lens. Any of our advertisers of lanterns can replace it for you; but we cannot mention any one firm in preference to another.

Disc.—We have mislaid name and address. If you send it, we will forward you sketch of valve.

A. Benson.—Thanks for the paragraph relating to the severe tests to which the oxygen cylinder was subjected.

Well-wisher writes: "Please inform me where I can obtain duplicates of Mr. Muybridge's circular plates for the lantern, so that I can illustrate the movements of certain animals."

Ans.: We do not think they are in the market.

It. N.—From Riley Bros. See page 55.

Jas. S. Roberts.—No. We do not undertake to make selections of slides for exhibition. Consult a dealer.

Reader.—Your queries are not very lucid; please repeat them in different form.

THE LANTERN SOCIETY.—At a meeting held at St. James' Hall, Restaurant, on the 20th ult., the rules and regulations drawn up by the committee were, with one or two modifications, adopted; and the following officers appointed for the ensuing year:—Chairman, the Hon. Slingsby Bethell; vice-chairman, Mr. T. H. Holding; secretary and treasurer, Lieut. C. E. Gladstone, Northwood Hall, Rickmansworth, who with the following will form the council—Messrs. Croswell, Hall, Mackie, Maw, Sheppel, and Shipton. Rule 15 says, "The annual subscription for town members shall be one guinea, together with an entrance fee of one guinea; the annual subscription for country members, residing outside a radius of 25 miles from Charing Cross, shall be half-a-guinea, together with an entrance fee of half-a-guinea. All members elected on or before 30th September, 1890, shall be exempt from any entrance fee. The entrance fee and subscription shall free all members up to 30th September, 1891."